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APPLICANT : TAIHEIYO CEMENT CORP;

INVENTOR : KISHI YUKIO;

INT.CL. : C04B 41/87 C23F 4/00 H01L 21/3065

TITLE : CORROSION-RESISTANT COMPOSITE MEMBER

ABSTRACT : PROBLEM TO BE SOLVED: To obtain a member having high resistances to halogen-based corrosive gases or plasmas thereof and suitable for a large-sized part by forming a corrosive film comprising a rare earth oxide in a specific proportion or above and constituting a site exposed to the halogen-based corrosive gases or plasmas thereof on a support having a coefficient of thermal expansion within a specific range and a specified value or below of dielectric loss.

SOLUTION: The coefficient of thermal expansion of a support is 7×10^{-6} to 12×10^{-6} and the dielectric loss thereof is $\leq 5 \times 10^{-3}$. The content of a rare earth oxide in a corrosion-resistant film is ≥ 50 wt.%. Y_2O_3 , Dy_2O_3 , Er_2O_3 and like are cited as the rare earth oxide and Y_2O_3 is preferred. When two or more components of oxides are contained, a compound oxide such as $Y_2O_3-Al_2O_3$ is preferably roentgenologically formed. The corrosion-resistant film is formed by a thermal spraying or a sputtering method. The support is preferably alumina, zirconia or the like. Thereby, cracking or peeling of a film due to a large difference in thermal expansion or a large dielectric loss is scarcely caused even when a large-sized part is provided.

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AB - JP2001031484 NOVELTY - The composite element has a corrosion resistant film containing 50 wt.% or more of oxides of rare earth elements formed on a support. The coefficient of thermal expansion and dielectric loss of support is 7 multiply 10⁻⁶ to 12 multiply 10⁻⁶ and 5 multiply 10⁻³ or less, respectively. The film is corrosion resistant to halogen group corrosion gas or their plasma.

- USE - Bell jar, chamber, susceptor, clamp ring, focal ring, etc. used in dry etching apparatus for semiconductor device and liquid crystal display device manufacture.

- ADVANTAGE - The composite element is resistant to halogen group corrosive gas or their plasma.

- (Dwg.0/0)

IW - COMPOSITE ELEMENT DRY ETCH APPARATUS SEMICONDUCTOR DEVICE
MANUFACTURE

CORROSION RESISTANCE FILM CONTAIN RARE EARTH ELEMENT FORMING
SUPPORT

SPECIFIC PROPERTIES

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SPECIFIC PROPERTIES

NC - 001

OPD - 1999-07-22

ORD - 2001-02-06

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TI - Composite element in dry etching apparatus for semiconductor device
manufacture has corrosion resistant film containing oxides of rare
earth elements formed on support having specific properties